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ABSTRACT

Proceeding from a definition of "story schema" as an idealized internal representation of the parts of a typical story and the relationships among those parts, this paper explores the role of story schemata in reading comprehension. The paper also identifies variables that may affect the way in which schemata function and outlines the instructional implications of story schemata theory. Following an introduction, the paper examines several story grammar models (story grammar refers to the structure of the text being comprehended) that have been used consistently in research, focusing on and comparing those designed by J. M. Mandler and N. S. Johnson (1977) and N. L. Stein and C. G. Glenn (1979). Next, the paper treats the role of story schema in comprehension, pointing out that story schemata appear to play a primary role in reading and listening comprehension. Continuing a review of the literature, the paper examines the variables, such as developmental factors, reading ability, and input/output modality, that affect the operation of story schemata. The paper then considers the instructional implications for reading comprehension and writing of story grammar research. The paper concludes with a research summary and recommendations for making that research applicable to classroom practice. (References, tables of data, and figures are appended.) (NKA)

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THE ROLE OF STORY SCHEMA IN COMPREHENSION:

A Teacher's Perspective of the Research and Educational Implications

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Introduction

Most children are introduced to the world of story at a very early age. During the preschool years, stories are told and books are read to children. Therefore, when children first enter school, they bring with them a rich concept of story based upon their experiences with oral and written narratives. As their awareness for stories expands, they come to enjoy the predictability and the structure inherent in story design.

Stories form the basis of formal instruction in reading and writing. Children are taught to read stories in their pre-primers; they will continue to read stories throughout their school careers, even after the introduction of other forms of written discourse. Children generate their own stories orally, and are then taught how to create a written narrative.

Through this exposure to and familiarity with stories, children develop a set of expectations that directs them during the encoding, retrieval, and generation of stories. Researchers call this set of internal expectations a "story schema".

The existence of story schemata raises several questions related to educational practice. If story schemata play a role in the comprehension of oral and written text, how do they function during the comprehension process? Are

there variables, such as age, reading ability, and modality, which may affect the extent to which schemata function? What are the educational implications for direct instruction in story schema principles?

The purpose of this paper is to explore the role of story schemata in comprehension, to identify variables which may have an effect on the way in which schemata function, and to outline the instructional implications of story schema theory.

Story Schema and Story Grammars

Schema theory provides the background for research in the areas of story schema and comprehension. Schema theorists (Hacker, 1980) believe that experience is translated into cognitive structures called schemata. These schemata form a representational framework into which new information is organized. Comprehension can therefore be defined as the act of assimilating knowledge into a pre-existing structure which is based upon prior experience.

Within the context of schema theory, many researchers have developed models specifically designed to explain the process of narrative prose comprehension. The cognitive structure which acts as the organizational framework for the understanding of narrative discourse is known as a "story schema". It can be defined as "an idealized internal representation of the parts of a typical story and the

relationships among those parts" (Mandler and Johnson, 1977, p. 111). An assumption is made by many researchers that it is used as a guide for organizing incoming story information in order to facilitate recall of that information at a later date (Mandler, 1978; Mandler and Johnson, 1977; McConaughy, 1980, 1982; Stein, 1979; Stein and Glenn, 1979; Whaley, 1981b).

The term "story grammar" refers to the structure of the text being comprehended. The distinction between the external structure (story grammar) and the internal structure (story schema) can not be overemphasized. Although there may be a direct correspondence between the text structure and the story schema, this is not always the case (Stein, 1979; McConaughy, 1982). Comprehension is the act of assimilating any story, regardless of its surface structure, into the ideal story schema. It is assumed that the reader or listener makes inferences about the story when certain aspects of the structure are not textually explicit (Stein, 1979).

Although several story grammar models have been developed, those designed by Mandler and Johnson (1977) and Stein and Glenn (1979) have been used most consistently in story schema research. Basically, each model "defines a story as a series of problem solving episodes centering on the main character's (or characters') efforts to achieve a major goal" (McConaughy, 1980, p. 158). The fact that the

validity of both of these grammars has been supported by research may indicate that the distinctions between the two are insignificant, and that there may be a need for a more general grammar encompassing elements of each (Whaley, 1981b). However, for the purposes of this paper, each grammar will be explained and the parallels between the two outlined in table form.

The Mandler and Johnson Grammar:

Mandler and Johnson (1977) developed their story grammar model based on folktales, fables, and myths from the oral tradition. The structure of a story is represented using a tree diagram. The various story elements are known as nodes.

Each node can be either a STATE (condition or emotion) or an EVENT (happening). States and events can either be internal or external. They are known as higher-level or terminal nodes.

Basic nodes are the most important story constituents or elements, and form the overall structure of the story. In order for text to be classified as a story, it must contain a setting and an event structure. The event structure consists of 1) a beginning, 2) a development, and 3) an ending. Therefore, a minimal story contains four propositions (sentences or phrases) which correspond to the four

basic nodes--setting, beginning, development, and ending. (See Table 1.)

The function of the setting is to introduce the protagonist and other characters, and to establish the context in which the story takes place. The beginning contains one or more events which motivate the character to act. The development contains either a simple reaction (which results in an action) or a complex reaction (which results in a goal, an attempt, and an outcome). The ending contains an event and an emphasis, which is usually in the form of a moral.

There are three types of relationships which are used to connect the story nodes. The AND relationship indicates simultaneous occurence, whereas the THEN connection indicates a temporal sequence of events. The CAUSE relationship implies both a temporal and causal sequencing.

Each event structure is classified as an episode. Stories containing more than one episode employ AND, THEN, and CAUSE to establish the episodic relations.

The Stein and Glenn Grammar:

In an attempt to clearly define the elements which constitiute a story and their heirarachical relationships, Stein and Glenn (1979) developed a story grammar model which they attempted to validate in subsequent research studies. Slight modifications and simplifications of the grammar appear in other studies (Stein, 1979; Stein & Nezworski, 1978;

Stein & Policastro, 1984; Stein & Trabasso, 1981). For the purpose of this paper, the basic structural elements of the grammar are presented.

According to Stein and Glenn, a story is composed of a setting and an episode system. Although it is distinct from the episode system which follows it, the setting influences the rest of the story and is connected to the episode system with an ALLOW connection. The setting enables the episode to occur by establishing the parameters and context for the remainder of the story.

The episode system consists of five separate elements: 1)the initiating event, 2)the internal response, 3)the attempt, 4)the consequence, and 5)the reaction. The elements in the episode are causally and temporally connected. The initiating event prompts the protagonist to react in a goal-directed manner. The protagonist responds to the event, develops a plan of action, and engages in an overt attempt or a series of attempts to reach the goal. The consequential result of this behavior is the success or failure of the protagonist. The individual reaction of the protagonist and/or the larger consequences of the protagonist's behavior form the resolution of the episode. (See Table 1.)

In defining an episode, Stein and Glenn established the basic requirements for episode classification. A minimal "episode must contain 1)an initiating event or an internal response which causes a character to formulate a goal-

directed behavioral sequence, 2)an action, which can either be an attempt or a consequence, and 3)a direct consequence marking the attainment or nonattainment of the goal" (1979, p. 72).

A story may include more than one episode. Episodes are linked using AND, THEN, or CAUSE connections. When one episode begins prior to the conclusion of a first, the episode is said to be embedded.

Table 1 (see Appendix) illustrates the parallels between the Stein and Glenn (1979) and Mandler and Johnson (1977) grammars. This analysis highlights the similarities between the two grammars, and demonstrates that the one real difference between them is in the breakdown of the development and internal response categories. As Whaley (1981b) contends, the differences appear to be insignificant in light of the similarities. A generic grammar, encompassing characteristics of both the Stein and Glenn (1979) and Mandler and Johnson (1977) grammars, would serve to promote clarity in the story grammar research.

The Role of Story Schema in Comprehension

Research seems to indicate that story schemata play a primary role in reading and listening comprehension. Although the studies vary greatly in their design, the conclusions can be categorized into two areas affecting story comprehension--temporal sequencing of story events and the

heirarchical arrangement of story elements during recall. In each of these areas, the research demonstrates that schemata function during the comprehension process as an organizational aid during recall. However, the research also indicates that schemata are functioning at an unconscious level; individuals are not metacognitively aware of using story schema in comprehension.

Temporal Sequencing:

In a study published in 1978, Mandler studied the effects of structural variation on the quantity, quality, and temporal sequencing of recall. Subjects were asked to listen to four stories and to recall everything they could remember about the stories the following day. Half of each group listened to four structurally intact, dual-episode stories; the other half listened to four corresponding stories in which the five basic nodes had been rearranged in an interleaved fashion. An interleaved story is constructed by taking the corresponding elements from each episode and arranging them so that an element from the first episode is followed by the same element from the second episode. Table 2 (see Appendix) demonstrates the principle.

The results indicated that more nodes per episode were recalled from the intact stories than from the interleaved versions ($p < .05$). In addition, the interleaved story recalls contained more additions, distortions, repetitions, and character/event confusions. The recall protocols of

elementary grade students for the interleaved stories more closely approximated the ideal story structure than the actual input they received ($p < .001$). Although the recall protocols of the adults on the interleaved stories did not match the ideal structural order, they were also unable to match the interleaved order with any accuracy. Temporal inversions in recall occurred more frequently in the interleaved stories, but the difference between the interleaved and intact versions was not significant.

Several conclusions can be drawn from this study, but the results definitely indicate that story schemata play some part in determining the order in which story events are recalled. Children recalled the story events in an order more closely related to the Mandler and Johnson grammar than to the actual input they received. All subjects were better able to recall stories which followed the ideal temporal sequence than stories which were presented in an interleaved fashion.

Although it appears from the Mandler study that adults employ story grammar to a lesser extent than children do, Stein and Nezworski (1978) obtained somewhat discrepant results in their study on the effects of temporal organization on story memory. Using adult subjects, the study examined the effects of temporally disorganized story input across two memory tasks. Four types of story variations were investigated: 1)grammatically ideal stories, 2)slightly-

disordered stories containing one temporal inversion, 3)randomly-ordered stories, and 4)causally unrelated/ semantically related statements. The two memory tasks required that subjects read the stories and then 1)recall the story elements in their exact order and 2)recall a "good story" that was semantically accurate. The results of this study indicated significant differences in the recall of the four story variations ($p < .001$), significant differences in the exact order and "good story" memory task ($p < .01$), and significance in the interaction between variation and task ($p < .05$). Figure 1 (see Appendix) illustrates the interaction between memory task and story variation.

In addition, when a subject was asked to make a "good story" that was semantically accurate, there was a high correlation between the ideal story grammar order and the recall protocol of the subject (see Table 3 in Appendix). The adults were using story schema to organize and retrieve temporally distorted input in a manner similar to the children in the Mandler (1978) study.

Similar results were obtained by Stein and Glenn (1978). In this study, seven- and eleven-year-old children were given story fragments and asked to construct a "good story". Results indicated a correlation between the stories they constructed and the ideal story grammar sequence, particularly for older children (.44 for seven-year-olds and .77 for eleven-year-olds).

In another study (Stein & Glenn, 1979), attempted to show that the temporal organization of stories has an effect on recall. They hypothesized that if children were told stories which corresponded to their internal schema, their recall protocols would correspond to the external story grammar. First- and fifth-grade children were told stories and asked to orally recall the story as accurately as possible immediatley after hearing it and then again one week later. Correlations for the relationship between the temporal sequence of the four stories used and the recall protocols was high (in all but one case above .92) across grade levels and condition (immediate and delayed recall). One weakness of the Stein and Glenn study is that it did not measure the effect of temporally disorganized stories, and therefore did not provide a control group to support their hypothesis.

Jill Fitzgerald Whaley (1981a) did explore the effects of temporal disruption on average and above average readers in the third, sixth, and eleventh grade. In the first task, subjects were randomly assigned to one of nine conditions, and asked to read stories in which the reaction and outcome categories had been moved to various locations or in which the story events had been scrambled. In the second task, subjects were assigned to one of seven conditions in which the story categories were systematically deleted. For each task, there was a control condition in which the story was presented intact. The students were asked to read the

stories, and to inform the researcher if they detected any inconsistencies or deletions in the way the story was presented.

Although the results for the first task showed a significant main effect for story condition ($p < .0001$), comparison of each condition to the control group seemed to indicate that subjects failed to react to many of the temporal distortions. Subjects reacted most strongly to the scrambled story, and to stories in which the reaction and outcome categories were moved toward the beginning of the story.

Again in the second task, the results indicated a significant main effect for story condition ($p < .0001$), but further analysis revealed that only the deletion of the Beginning category produced significant results when compared with the control group. Subjects were not affected by the deletion of any other category. This is somewhat surprising in light of some of the other studies cited previously, because it suggests that the metacognitive ability to detect disruptions in a story may not have any effect on temporal recall.

In summarizing the research on temporal recall, it is clear that readers and listeners use story schema to order incoming story events for future recall. Recall more closely approximates the ideal story grammar sequence than the actual encoded sequence of the story. However, this organizational procedure may be unconscious; subjects do not

express awareness when faced with temporal disruptions during encoding.

Many of these studies also led researchers to believe that certain story categories were perceived as being more important than others. In their research on temporal recall, they discovered that some categories were more salient than others, and hypothesized that the relationship between story grammar elements is heirarchical in nature.

Heirarchy of Story Grammar Elements:

Mandler and Johnson (1977) conducted a study in which subjects were asked to listen to two stories, recall the first immediately, and recall the second twenty-four hours later. First-graders, fourth-graders, and university students participated in the study. Recall protocols from both the immediate and delayed condition were analyzed, and some trends were found across age groups. Settings, beginnings, and outcomes were always well recalled. Attempts were recalled with greater frequency by fourth-graders and adults than by first-graders. Endings and reactions were consistently the most poorly recalled.

In a 1978 study previously cited, Mandler replicated the 1977 results with children and with adults. Again, endings and reactions were recalled with significantly less frequency ($p < .001$ in both cases) than were settings, beginnings, attempts, and outcomes.

Stein and Glenn (1979) found similar results with first and fifth grade students. A rank order analysis across the four stories used in the study indicated a highly significant ($p < .01$) degree of correspondence in the recall saliency of individual story categories. The major setting, initiating event, direct consequence, and attempt categories were the most frequently recalled. These correspond to the setting, beginning, outcome, and attempt categories in the Mandler and Johnson grammar. Internal responses and reactions were less frequently recalled, corresponding to the Mandler and Johnson reaction and ending categories respectively. The minor setting category was also less frequently recalled than the others; however the minor setting distinction has no parallel in the Mandler and Johnson grammar, consisting only of ancillary setting statements. Figure 2 (see Appendix) illustrates the patterns of saliency during recall.

McConaughy (1982) found consistency in item saliency during recall across ability and modality factors. Her results are similar to those obtained in the Stein and Glenn (1979) study, with the exception that the attempt category was not recalled as well as other categories ($p < .05$).

There is agreement on the issue of which story elements are most frequently recalled; the basic differences being found in the category names rather than in the relative saliency of the categories. Therefore, the heirarachical

arrangement of story grammar elements, based on recall protocols, is similar for each grammar model. This lends further support to the contention that a generic grammar is needed to account for the similarities between the Stein and Glenn (1979) and the Mandler and Johnson (1977) grammar models (McConaughy, 1981b).

Interestingly, Stein and Glenn (1979) found different results when they asked first- and fifth-grade subjects to identify which story elements they felt were most important to remember. First-graders felt that direct consequences, internal responses, and initiating events were the most important story elements in rank order. Fifth-graders, on the other hand, identified internal responses, initiating events, and direct consequences as being the most important. Although their responses vary in terms of rank order, the direct consequence, internal response, and initiating event categories are the most essential categories based on importance judgements. When this data is compared with the recall data, some discrepancy is evident. Two categories which are recalled with the greatest frequency (major setting and attempt) are not perceived as being important to remember, while both direct consequences and internal responses are. The internal response category, perceived as being important, is one of the most poorly recalled categories.

In a study of the expectations of good and poor readers for story structure, Jill Fitzgerald Whaley (1979) found

that elementary and high school students did not express a heirarchical order of importance for story grammar elements. When subjects were asked to predict endings for an incomplete story or were asked to complete a macro-cloze task on a story in which one element was missing, their responses did not indicate a rank ordering of the story grammar categories. Only the reaction category appeared to be poorly represented in their responses. Whaley's results indicate that story schema may be heirarchical for memory tasks, but that reader's expectations for story grammar elements are not heirarchical in nature. Thus, readers use story schema to interpret the importance of what they have read for recall purposes, but they do not seem to expect a heirarchical arrangement during encoding.

These results lend support, as do the results relating to temporal sequencing, to the conclusion that story schemata operate automatically and unconsciously during recall. The ability to judge the importance of story elements and the expectations that readers bring to the text appear to have little effect on the degree to which story elements are recalled.

Variables Affecting the Operation of Story Schemata

The research in story comprehension indicates that story schema operates unconsciously and automatically during the encoding and retrieval of story information, but developmental factors, reading ability, and input/output modality

may have an effect on the quantitative or qualitative use of story schema by the individual.

Developmental Factors:

There is a general consensus among researchers that developmental differences in the usage of story schemata do exist, but there is some disagreement as to the extent and degree of the differences.

The research of Mandler and Johnson (1977) and Stein and Glenn (1979) indicate that there are quantitative differences in story grammar usage during recall. There is an age trend in the amount of story information recalled; older children and adults remember more than younger children. In a later study, Mandler concludes that "story schema was much more prominent as a retrieval strategy for the children than the adults" (1978, p. 34), but this seems to be indicative of the extent to which a story schema was employed during recall rather than a reference to the amount of information actually recalled.

The aforementioned studies also indicate qualitative developmental differences in the use of story grammar. In particular, the Stein and Glenn (1979) study showed an increase in the recall of internal responses and the number of inferences added during recall as the age of subjects increased. No developmental differences were found, however, in temporal sequencing or heirarchical arrangment of story

categories, indicating that these areas are relatively stable factors in story comprehension.

The issue of developmental differences is not only addressed in research focusing on recall, but has also been examined in research on story expectations and metacognitive awareness of story structure.

The research of Whaley (1979) and Stein and Policastro (1984) investigated the existence of a developmental trend in what readers and listeners expect to find in a story. In her study, Whaley asked subjects in the third, sixth, and eleventh grade to participate in a story completion task and a macro-cloze task. In each task, the responses of the older students were based more upon the story grammar than were the responses of the third-graders. This demonstrates a developmental trend in the degree to which children expect to find structural regularity.

In the Stein and Policastro (1984) study, teachers and children identified prose passages as being or not being stories and then rated their quality. They found that "the number of features in a text was related directly to the proportion of subjects willing to accept the passage as a story" and that there was an "almost perfect correlation between the number of features included in a text and the goodness ranking of the text" (pg. 150). These results indicated that both the adults and the children in the study expected a high degree of story complexity. However, the

children seemed to have a more narrow definition of story than did the adults, who accepted a greater range of prose passages as being a story. These results seem to contradict the Whaley study just cited; the adults' definition of story conformed less to the grammatical definition than did that of the children. Thus, it is difficult to determine whether or not there is a developmental trend in the expectations of readers and listeners for stories. This seems to be an area in which further research is needed.

Whaley (1981a) and Hoover (1982) added another dimension to developmental story grammar research in their investigation of the metacognitive ability to detect story disruptions. Whaley found that older readers were more aware of story disruptions than were younger children, but that there was no difference in the type of disruption to which they were sensitive. In support of this, Hoover demonstrated that there was growth in the ability to detect structural variation within one school year, especially in kindergarten and first grade, but that the type of disruption had no effect on this ability. Clearly, there is a developmental trend in the ability to identify stories which are structurally distorted, but any distortion in the structure of a story seems to produce the same results.

Stephanie McConaughy (1980, 1982) proposes three developmental stages in schema acquisition in a model which is based largely upon her research. She suggests that there

are three different types of schema which are acquired by readers and listeners:

1)Simple Description Schema--focus is on literal level and temporal sequence of events.
2)Information Processing Schema--focus is on the inferential level and physical cause/effect relationships.
3)Social Inference Schema--focus is on the interpretive level, psychological causality, and motivational factors.

In her research on expressed heirarchical importance of story grammar elements, she found that children "emphasized the causal relations in the action sequences" and that adults "added the major goals of the characters" (1982, p. 583). She characterized the developmental trend as representative of "qualitative changes in the level of complexity in the internal cognitive schema used by the children and adults" (1982, p. 583).

After reviewing the developmental research on story schema, there seems to be a need for a model like the one developed by McConaughy. There are both quantitative and qualitative differences in how stories are perceived by subjects of different ages. A developmental model such as this would account for these changes. More research is needed, however, to determine if this model is adequate for explaining the growth in quantity and quality of story schema usage.

Reading Ability:

Using prediction and macro-cloze procedures from a previous study (Whaley, 1981a), Fitzgerald (1984) attempted to assess the degree to which reading ability and expectations for story structures were related. Her subjects consisted of students in the fourth and sixth grade with a wide range of reading ability levels as determined by the California Achievement Test, and her materials consisted of four different stories adjusted in various ways for the prediction and macro-cloze tasks. Her hypothesis stated that a relationship between reading ability and story structure expectations would be evident if subjects responded to the prediction and macro-cloze tasks in a manner corresponding to the Mandler and Johnson (1977) story grammar. Although she concludes that "there was a relationship between reading achievement and the extent to which readers expected particular narrative structures" (p. 32), I don't feel that her data are in support of this conclusion. If a relationship between ability and expectations exists, than the proportion of responses which match the grammar should increase in correspondence with the ability level. This finding should be stable across individual stories and across grades. However, as Figure 3 and Figure 4 illustrate (see Appendix), this trend occurs in only three of the four stories and only at the fourth grade level. This would seem to indicate that reading ability is not predictive of the extent to which

readers' expectations for story structure match the actual story grammar.

This interpretation of Fitzgerald's results is supported by the research of McConaughy (1982). By structuring a series of reading/listening tasks requiring oral and written responses, she analyzed the story comprehension patterns of good and poor readers in the sixth grade. She found similarities in the comprehension patterns of the two groups as a whole, especially in the areas of item saliency, heirarchical arrangement, and inferences made during recall. Basic differences between the two groups occured in length of recall protocols and spelling errors in written recall protocols. Good readers produced longer oral and written summaries than poor readers ($p < .01$), and the written summaries of poor readers contained more spelling errors than those of good readers ($p < .05$). These differences aside, however, McConaughy concludes that "poor readers' comprehension, as a group, was equivalent to that of good readers" in terms of their interaction with elements of the story grammar (1982, p. 14) .

Input/Output Modality:

The final variable which may have an effect on the quality or quantity of story schema usage during comprehension is the nature of the input (reading vs. listening) and output (oral/written, literal/inferential) modalities used in various studies. Due to the variablity of research

designs, it has been difficult to draw definitive conclusions about the role of schemata in story comprehension.

The only study I have found that directly addresses this issue is the previously cited study by McConaughy (1982). Her results on the comprehension patterns of good and poor readers indicate stable performance by subjects across the input/output modalities of listening, reading, speaking, and writing. The only significant difference was in the length of recall protocols; written summaries were shorter in length than oral summaries ($p < .05$), regardless of input modality or ability level. The study also explored the addition of inferential statements to the recall protocols. The results indicated that significantly more inferences were made in the listening (input) and oral (output) modality combination ($p < .05$).

Clearly, more research is needed on the effect of listening and reading input tasks. Are subjects better able to recall stories in one modality than in another or are story schemata stable across input tasks? Also of interest is the effect of output tasks on the interpretation of story grammar research. Do oral recall results vary from written recall results? Should recall measures be used to analyze comprehension or should higher level comprehension skills be examined? These questions can only be answered through more research along the line of the McConaughy (1982) study.

Instructional Implications of Story Grammar Research

The information obtained from story grammar research has been applied to the field of education in two broad areas--comprehension and writing. Some research has been done on the overall effects of direct instruction in story structure principles on comprehension; even less has been done on the effects of direct instruction on writing.

Comprehension:

In her concluding statements on the implications of story grammar research for eduction, Stein (1979) outlines two areas of focus for educators. First, Stein suggests that care be taken in choosing tasks which measure comprehension. Although she admits that recall procedures have provided her with a good deal of information on how children comprehend stories, she cautions against the interpretation that recall is the only aspect of comprehension which is important. Secondly, she stresses the importance of prior knowledge (structural and contextual) in the comprehension process.

McConaughy (1980, 1982) went farther in making suggestions for the usage of story schema theory in the classroom. In creating a developmental model of story schema acquisition, she proposed that this model be used as a framework for pre- and post-questioning strategies and as an alternative to traditional "main idea" techniques. She

advocated the use of open story diagrams for instructing students in how to outline the components of a story, and the application of these skills to the preparation of written summaries. McConaughy's techniques are especially appealing to me, because they focus on both the structural characteristics of the text and the developmental characteristics of the child.

Whaley (1981b) developed instructional tasks based upon actual research techniques. She suggested that students could be instructed in story structure by using prediction tasks, macro-cloze techniques, scrambled stories, story element sorting procedures, and retelling games. Her method is designed to help students acquire a structural sense of story.

Schmitt and O'Brien suggest several appropriate methods for using story grammar as "an organizational framework to enhance children's interactions with stories" (1986, pg. 5). Their guidelines include story discussion; predicting outcomes; identifying temporal and causal relationships; identifying with the motives, problems, and goals of the main character and relating these to prior experiences; and retelling or summarizing the story.

The effects of direct instruction in story structure techniques were explored by Fitzgerald and Spelgel (1983). They contrasted short-term and long-term instruction in the structural features of narratives with instruction in

dictionary usage and word study. They employed many of the instructional techniques outlined above. Two measures (story completion and scrambled story recall) were used to evaluate comprehension after each phase of instruction. Although there was no significant differences in the two groups prior to instruction (based on an analysis of their California Achievement Test scores), the group receiving story structure instruction did signficantly better on the two comprehension tasks than the group receiving instruction in dictionary usage and word study ($p < .02$). Specifically, they seemed more aware of temporal characterisitics and were better able to recall the scrambled stories; however, they produced more distortions and additions than the other group. Overall, the effect on comprehension was positive and seemed attributable to the instruction the story structure group received ($p < .01$).

However, one weakness of this study is in the choice of dictionary usage and word study skills as a contrast to the story structure instruction. It is not surprising that the story structure group appeared to comprehend better during evaluation; unlike the control group, they were being tested on what they had been taught. A more valid instructional procedure to use in contrast to the story structure techniques was employed in the following study.

Gordon and Braun (1982) found that students who received story schema training recalled more structural

elements on familiar selections ($p < .001$) and on new selections ($p < .001$) when compared to a control group that received discussion and literature appreciation activities. In addition, these students answered more literal and inferential comprehension questions correctly ($p < .001$).

The research of Dreher and Singer (1980), however, is in direct contrast to these findings. They conclude that story grammar instruction is unnecessary for older children, because students in the intermediate grades already possess a functional story schema. However, their results were obtained from a short-term analysis using a small sample (28 subjects), restricted instructional time (three 45-minute lessons), and a limited set of materials (two stories, low readability).

Writing:

The story grammar approach can be applied both to the reading and the writing of narratives. Recognizing the connection between reading and writing, Rubin (1980) and Piccolo (1986), created models for the generation of written narratives based upon structural principles. In addition, Piccolo advocates the usage of such a model for the purposes of the examination, diagnosis, prescription, and treatment of writing difficulties in the classroom.

The only research that I have found that examines the effect of direct instruction in story grammar on writing is

the Gordon and Braun (1982) study previously cited. They not only measured the effects of story schema training on comprehension, but they also examined the effect on writing skills. The direct instruction had a significant effect on the creative writing of students who received the story grammar instruction. They produced narratives which were more complex (based on the number of grammatical elements included) than did students in the control group ($p < .05$).

There seems to be some indication that direct instruction in story structure techniques may have a positive effect on comprehension and writing skills. Further research must be done, however, in order to establish the validity of such a statement and to explore the most effective means for achieving positive results.

Summary of Research

In reviewing the story grammar research outlined in this paper, I feel that it is important to summarize a few major points that have been made by researchers. The research on story grammar usage is quite extensive and detailed; certain patterns, however, become evident when the body of research is looked at as a whole.

Through the research of Mandler (1978), Stein and Nezworski (1978), and Stein and Glenn (1978, 1979) much has been learned about the temporal function of story schemata during the comprehension and recall process. Their research

has shown that internal schemata enable children and adults to organize story information in a logical sequence during retrieval, despite the nature of the actual story input. In a related line of research, Whaley (1981a) demonstrated that schemata seem to be operating on an unconscious and automatic level. Readers do not express an awareness of temporal disruptions in text which may have an effect on their ability to comprehend the information.

Researchers (Mandler, 1978; Mandler and Johnson, 1977; McConaughy, 1982; and Stein and Glenn, 1979) hypothesized that story grammar categories were heirarchical in nature. Certain categories were more salient in recall than others, and appeared to be more important in the retrieval process. The heirarchical arrangement for the Mandler and Johnson (1977) grammar appears to be as follows:

Most Important: Settings, Beginnings, Outcomes
Important: Attempts
Least Important: Reactions, Endings

There is a direct correspondence between this heirarchical categorization and that in the Stein and Glenn (1979) grammar:

Most Important: Major Setting, Initiating Event, Direct Consequence, Attempts
Least Important: Internal Responses, Reactions

The research also showed that the heirarchical function of story grammar operates on an involuntary level (Stein and Glenn, 1979; Whaley, 1979). When asked which of the story

categories they perceive as being important for recall, subjects do not respond in a manner which matches the recall data listed above. Subjects also did not seem to expect a heirarchical arrangement of story grammar elements during encoding. There appears to be a discrepancy between what is perceived as being central to a story and what is actually remembered after a story has been read.

The degree to which story schemata function in the individual appears to be influenced by developmental factors. Quantitatively, older children and adults recall more story information than do younger children (Mandler and Johnson, 1977; Stein and Glenn, 1979).

Qualitative differences attributable to development are less evident in the research. Stein and Glenn (1979) found an increased representation of the internal response category and a greater number of inferences in the recall protocols of older subjects. They also found that temporal sequencing characteristics and the heirarchical arrangement of story grammar elements remained relatively stable over time.

The research of Whaley (1979) and Stein and Policastro (1984) presents somewhat conflicting results on the extent to which readers and listeners expect to find structure in text. Although it is not clear if there is a developmental trend in readers' and listeners' expectations for story structure, Whaley (1981a) and Hoover (1982) found a clear developmental pattern in the metacognitive ability to detect

textual inconsistencies and disruptions which violated the story grammar sequence.

In response to the research on developmental differences, Stephanie McConaughy (1980, 1982) proposed a developmental model of story schema acquisition which may be a valid way of explaining some of the differences in how children and adults percieve stories.

Aside from developmental factors which may affect the operation of story schema in the individual, two other variables were explored. Reading ability (Fitzgerald, 1984; McConaughy, 1982) and input/output modalities were examined. The results of these studies support the conclusion that neither ability nor modality have any effect on story schema operation, but more research in this area is needed.

Finally, some of the research addressed the application of story schema theory to classroom practice. Several researchers outlined suggestions for implementing story grammar techniques in the areas of comprehension and writing (McConaughy, 1980, 1982; Piccolo, 1986; Rubin, 1980; Stein, 1979; Whaley, 1981b). Preliminary research (Fitzgerald and Spiegel, 1983; Gordon and Braun, 1982) seems to indicate that there may be positive effects of direct instruction in story grammar techniques, but one study (Dreher and Singer, 1980) indicates that instruction is unnecessary.

Conclusions and Recommendations

The research on story schemata and story grammars supports the concept of an internalized sense of story that plays a role in comprehension. It appears that this cognitive structure, a schema, operates on an unconscious level. There has certainly been enough research to validate the existence of schemata and to determine the role schemata play in retrieval of story information, but there are a few questions raised by the research which are never satisfactorily addressed.

The differentiation between the story grammars (Mandler and Johnson, 1977; Stein and Glenn, 1979) is artificial, and serves only to confuse the basic issue. For educational purposes, a generic version of the story grammar is needed to describe the basic construct of the narrative form. A developmental model of schema acquisition (McConaughy, 1980, 1982) is a valid way of describing the changing relationship between the reader/listener and the text. From an educational perspecitive, more emphasis needs to be placed on the varying levels of schematic functioning and instructional techniques geared to these levels.

The effects of ability and modality on the operation of schemata need to be investigated further. Although the research outlined here indicates that these factors do not influence schema functioning, further research is indicated by

the fact that there is very little evidence to support any definitive conclusions.

The metacognitive aspect of schema functioning is also an area for further exploration. Can students be taught to monitor their comprehension by increasing their awareness of textual features?

In most of the research studies on story schema, recall tasks are used to measure comprehension. Many researchers recognize the limited level of understanding that these tasks require. According to Guthrie, "comprehension of a story is not comprehension of haphazard facts or a main idea,...it is comprehension of the setting, theme, plot, and resolution, their components, and their interrelationships" (1977, pg. 577). Comprehension at this level demonstrates a rich, wholistic understanding of story.

Instruction in story structure techniques may have value in enhancing comprehension and in improving the cohesiveness of written narratives, but further research is needed.

In translating research into classroom practice, great care must be taken to avoid too direct an interpretation of story grammar research. The objective of instruction should not be to parse, diagram, and outline a story for the purposes of total story recall. In a recent journal article, Schmitt and O'Brien state that "attempts to focus instruction on the structure at the expense of content will not

likely produce results as beneficial as will instruction that fine-tunes children's intuitions about characters and their motives" (1986, pg. 6). The purpose of instruction should be to provide students "with numerous opportunities to experience a rich variety of stories in an organized fashion using the grammar as a foundation" (1986, pg. 5).

Teachers can implement story structure techniques in their classrooms, and can assess the effectiveness of these techniques. The following factors should be taken into consideration prior to implementation:

-Purpose of Instruction: Am I trying to enhance comprehension, improve writing, or both?

-Instructional Techniques: How will I teach story structure principles?

-Material Selection: Are certain types of stories more applicable or appropriate for my purpose?

-Input/Output Modality: Listening, reading, speaking, writing.

-Definition of Comprehension: Literal, inferential, critical, creative.

-Assessment of Comprehension: How will I determine whether or not a child comprehends a story?

-Definition of Quality in Written Narratives: What characteristics are found in well-constructed stories?

-Assessment of Written Narratives: How can I tell when a child's writing has improved?

-Determination of Effectiveness: How do I determine when instruction has been successful?

Children have an internalized awareness of story, and the potential for enchanced comprehension and improved writing skills when they are exposed to the structure of text. Educators must recognize the instructional implications of story schema research, and carefully apply what has been learned to classroom practice. When this has been achieved, the effects of instruction can be measured and the benefits of instruction can be determined.

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Appendix

TABLE 1

Comparison between Mandler and Johnson (1977) and Stein and Glenn (1979) Story Grammar Elements

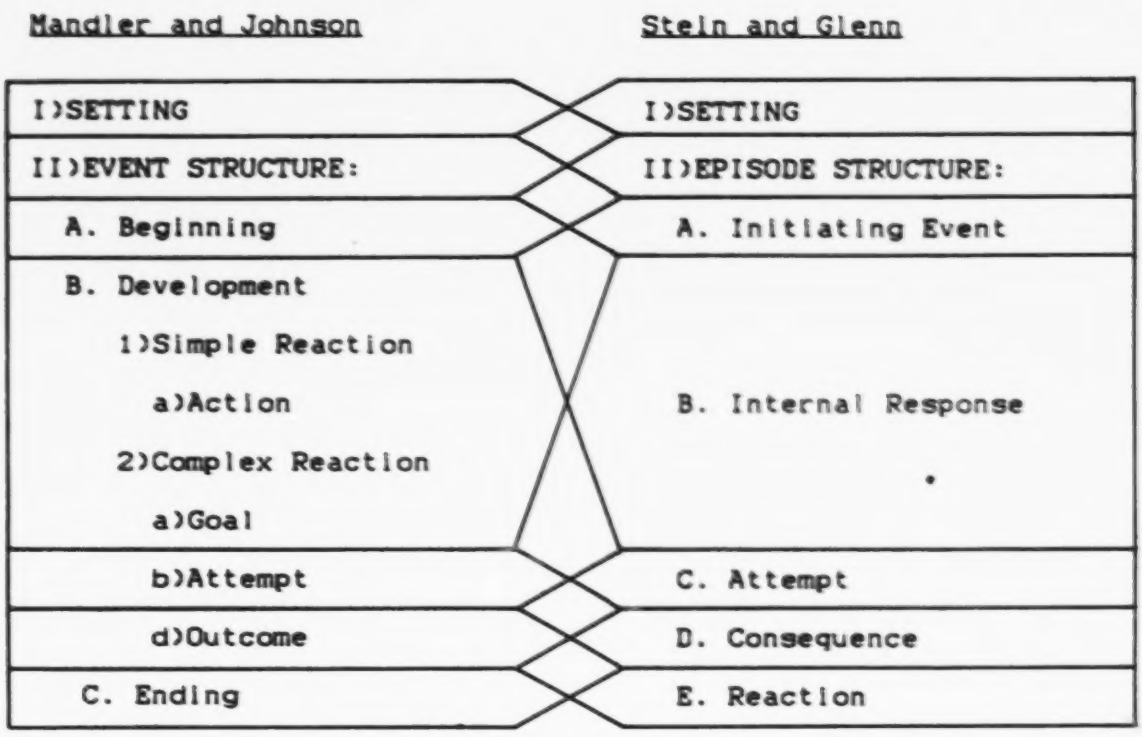


TABLE 2

An Example of a Standard Dual-Episode Story
and Interleaved Variation

Standard Version

Setting	Once there were twins, Tom and Jennifer, who had so much trouble their parents called them the unlucky twins.
Beginning 1	One day, Jennifer's parents gave her a dollar bill to buy the turtle she wanted, but on the way to the pet store she lost it.
Reaction 1	Jennifer was worried that her parents would be angry with her so she decided to search every bit of the sidewalk where she had walked.
Attempt 1	She looked in all the cracks and in the grass along the way.
Outcome 1	She finally found the dollar bill in the grass.
Ending 1	But when Jennifer got to the store, the pet-store man told her that someone else had just bought the last turtle, and he didn't have any more.
Beginning 2	The same day, Tom fell off a swing and broke his leg.
Reaction 2	He wanted to run and play with the other kids.
Attempt 2	So he got the kids to pull him around in a wagon.
Outcome 2	While they were playing, Tom fell out of the wagon and broke his arm.
Ending 2	Tom's parents said he was even unluckier than Jennifer and made him stay in bed until he got well.

Interleaved Version

Setting	Once there were twins, Tom and Jennifer, who had so much trouble their parents called them the unlucky twins.
Beginning 1	One day, Jennifer's parents gave her a dollar

	bill to buy the turtle she wanted, but on the way to the pet store she lost it.
Beginning 2	The same day, Tom fell off a swing and broke his leg.
Reaction 1	Jennifer was worried that her parents would be angry with her so she decided to search every bit of the sidewalk where she had walked.
Reaction 2	He wanted to run and play with the other kids.
Attempt 1	She looked in all the cracks and in the grass along the way.
Attempt 2	So he got the kids to pull him around in a wagon.
Outcome 1	She finally found the dollar bill in the grass.
Outcome 2	While they were playing, Tom fell out of the wagon and broke his arm.
Ending 1	But when Jennifer got to the store, the pet-store man told her that someone else had just bought the last turtle, and he didn't have any more.
Ending 2	Tom's parents said he was even unluckier than Jennifer and made him stay in bed until he got well.

Note: From "A Code in the Node" by J. M. Mandler, 1978, Discourse Processes, 1, p. 22.

TABLE 3

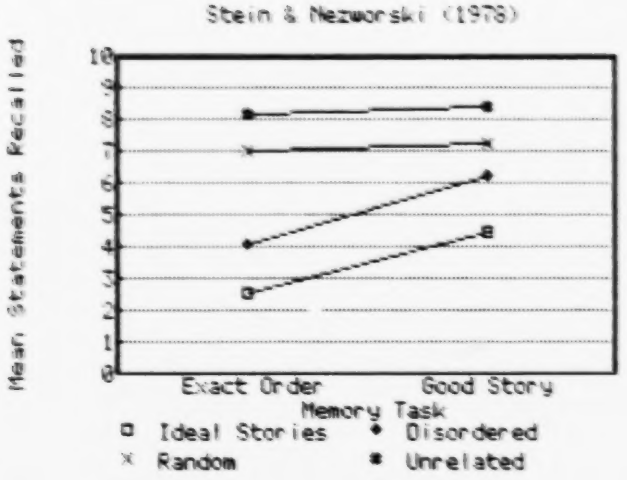
Results from Correlational Analyses on Temporal Ordering Strategies in Recall from Stein and Nezworski (1978)

	TO x RO[a]			SGO[b] x RO	
	Treatment			Treatment	
Story Condition	EO[c]	MS[d]	TO x SGO	EO	MS
Well-Formed	.98	.97	1.00	.98	.97
Slightly-Disordered	.72	.61	.76	.82	.93
Randomly-Disordered	.50	-.07	-.10	.20	.91
Unrelated Statements	.40	.48	0.00	0.00	0.00

[a]TO=text order, RO=recall order
[b]SGO=story grammar order
[c]EO=exact order memory task
[d]MS=make-a-story memory task

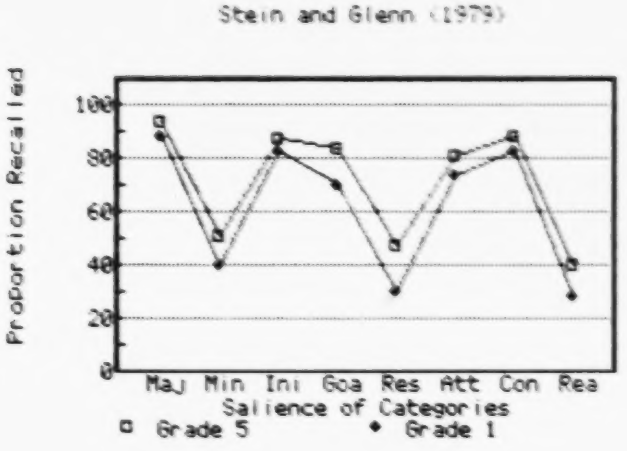
Note: From "The Effects of Organization and Instructional Set on Story Memory" by N. L. Stein and T. Nezworski, 1978, Discourse Processes, 1, p. 187.

Figure 1



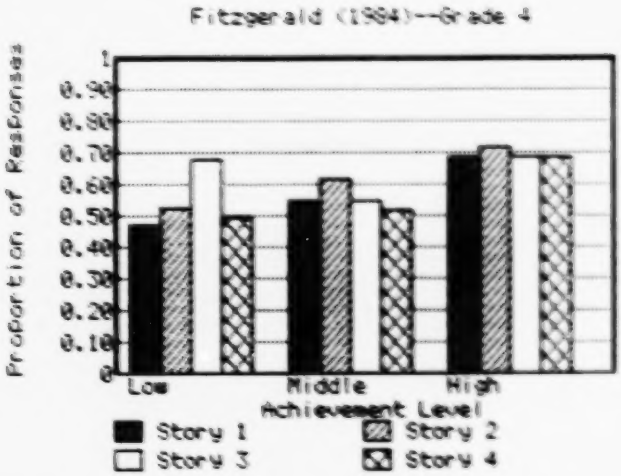
Note: From "The Effects of Organization and Instructional Set on Story Memory" by N. L. Stein and T. Nezworski, 1978, Discourse Processes, 1, p. 185.

Figure 2



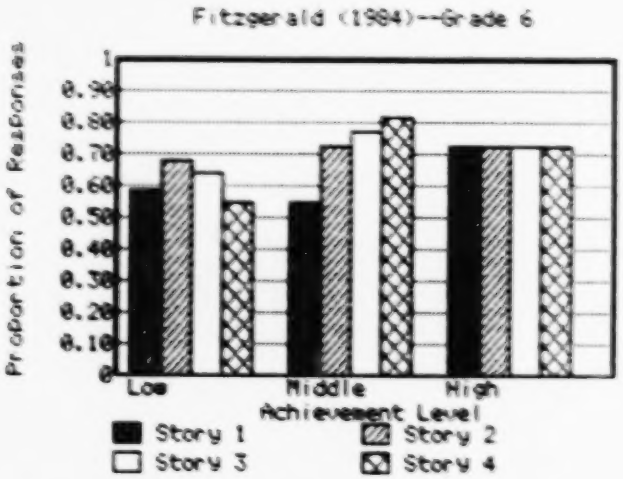
Note: From "An Analysis of Story Comprehension in Elementary School Children" in New Directions in Discourse Processing (pp. 53-120) by N. L. Stein and C. G. Glenn, 1979, Norwood, NJ: Ablex.

Figure 3



Note: From "The Relationship Between Reading Ability and Expectations for Story Structures" by J. Fitzgerald, 1984, Discourse Processes, 7, p. 32.

Figure 4



Note: From "The Relationship Between Reading Ability and Expectations for Story Structures" by J. Fitzgerald, 1984, Discourse Processes, 7, p. 32.